

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT L. CAULK, JR.,
HIDETAKA MAGOSHI and
KEVIN L. DABERKOW

Appeal No. 1999-0168
Application 08/540,349

ON BRIEF

Before RUGGIERO, LALL, and BLANKENSHIP, Administrative Patent Judges.

RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal from the final rejection of claims 1-16, which are all of the claims pending in the application.

The claimed invention relates to the processing of exceptions such as interrupts in a microprocessor-based

system. More particularly, the system utilizes a core central processing unit for instruction execution and a coprocessor for system control and exception processing. Upon notification of an exception, the normal sequence of instruction processing by the core central processing unit is suspended and an exception program counter is loaded with a restart location for use after the exception is serviced. Appellants indicate at pages 1 and 2 of the specification that after the context of the current operating state of the core central processing unit is saved, the coprocessor is enabled to service the exception by loading a status register with operating mode and interrupt enabling bits, thereby relieving the core central processing unit of the burden of servicing exceptions.

Claim 1 is illustrative of the invention and reads as follows:

1. A method of handling exceptions in a microprocessor system having a core central processing unit (CPU) and a coprocessor for system control comprising the steps of:

a) suspending a normal sequence of instruction by said CPU,

b) loading an exception program counter with a restart location for use after the exception is serviced,

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c) saving the context of the current operating state of said CPU, and

d) enabling said coprocessor to service the interrupt by loading a status register with operating mode and interrupt enabling bits.

The Examiner relies on the following prior art:

Cutler et al. (Cutler)	5,148,544	Sep. 15, 1992
Edgington et al. (Edgington)	5,530,804	Jun. 25, 1996

(filed May 16, 1994)

Claims 1-16 stand finally rejected under 35 U.S.C. § 103. As evidence of obviousness, the Examiner offers Cutler alone with respect to claims 1, 2, 6-9, 14, and 15, and adds Edgington to Cutler with respect to claims 3-5, 10-13, and 16.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Brief (Paper No. 11) and Answer (Paper No. 12) for the respective details.

OPINION

We have carefully considered the subject matter on appeal, the rejection advanced by the Examiner, the arguments in support of the rejection and the evidence of obviousness relied upon by the Examiner as support for the rejection. We have, likewise, reviewed and taken into consideration, in

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reaching our decision, Appellants' arguments set forth in the Brief along with the Examiner's rationale in support of the rejection and arguments in rebuttal set forth in the Examiner's Answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention set forth in claims 1-16. Accordingly, we reverse.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to

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arrive

at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole

or knowledge generally available to one having ordinary skill in

the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825

(1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.,

776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert.

denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v.

Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed.

Cir. 1984). These showings by the Examiner are an essential part

of complying with the burden of presenting a prima facie case of

obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d

1443, 1444 (Fed. Cir. 1992).

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With respect to independent claims 1 and 8, the Examiner's analysis (Answer, page 3, which makes reference to the final Office action, Paper No. 4, mailed June 5, 1997) asserts that Cutler discloses the claimed invention except that there is no explicit disclosure that interrupt servicing is performed by a coprocessor. Nevertheless, the Examiner asserts the obviousness to the skilled artisan of recognizing that any of the processors illustrated in Figure 1A of Cutler which service an interrupt could be considered a coprocessor.

In response, Appellants assert that the Examiner has failed to establish a prima facie case of obviousness since all of the claimed limitations are not taught or suggested by the prior art references. In particular, Appellants argue (Brief, pages 6-8) that, contrary to the limitations in the appealed claims, each of the processors in Cutler operate independently and individually to service exceptions and interrupts.

After careful review of the Cutler reference in light of the arguments of record, we are in agreement with Appellants' position as stated in the Brief. Our interpretation of the disclosure of Cutler coincides with that of Appellants, i.e.,

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contrary to the Examiner's assertion that Cutler is silent as to which of the plural disclosed central processing units is servicing an interrupt, there is a clear teaching that each central processing unit responds and acts on interrupt requests independently of any other central processing units connected to the system (Cutler, column 5, lines 47-66). We find no suggestion in Cutler of the suspension of a normal sequence of operation of a central processor unit while a coprocessor services exception or interrupt requests as set forth in the claims on appeal.

In our view, the only support on the record for the Examiner's conclusion that the skilled artisan would recognize the obviousness of utilizing a coprocessor to service interrupts in another processor while operation in that processor is suspended can only come from Appellants' own disclosure. In order for us to sustain the Examiner's rejection under 35 U.S.C. § 103, we would need to resort to speculation or unfounded assumptions or rationales to supply deficiencies in the factual basis of the rejection before us. In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968), reh'g denied, 390

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U.S. 1000 (1968).

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We have also reviewed the disclosure of the Edgington reference applied by the Examiner in combination with Cutler to address various features of several dependent claims. We find nothing in Edgington which would overcome the innate deficiencies of Cutler discussed supra.

In view of the above discussion, it is our view that, since all of the limitations of the appealed claims are not taught or suggested by the prior art, the Examiner has not established a prima facie case of obviousness. Accordingly, the 35 U.S.C. § 103 rejection of independent claims 1 and 8, as well as claims

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2-7 and 9-16 dependent thereon, cannot be sustained.

Therefore, the decision of the Examiner rejecting claims 1-16
is reversed.

REVERSED

JOSEPH F. RUGGIERO)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
PARSHOTAM S. LALL)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
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HOWARD B. BLANKENSHIP)	
Administrative Patent Judge)	

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